The Role of the Producer as Aural architect

Kerian Varaine **Musi445 – 2013**

In this paper I will be exploring the role of the producer as aural architect and how this conceptual approach can be used to create meta-instruments, to establish a desired physical/virtual performance environment and how one can utilise the result of this in staging the music being produced. In order to illustrate these concepts, I am going to employ a practice-based research method to produce two albums of contrasting genres: an album by Dunedin three piece rock/punk band, *The Feral Hunks*; and a portfolio of my own art music compositions.

After an exploration of the concepts of aural architecture, meta-instruments, performance environments and staging, an overview of the role of the traditional classical producer is given, along with examples of techniques used by two classical producers who have gone beyond this norm. The practical methods I used in creating the product of this research will be described, followed by more a detailed analysis of the production process for both albums.

Musicking: Performance as ritual, and the importance of space.

Christopher Small explains in his paper "Musicking: a ritual in social space."(Small, 1997) that a musical performance can be considered as ritual, and that every person involved in the performance, before and after, is part of what Small calls *musicking.* This concept also extends to the environment in which the ritual is taking place and that the musicking would either adapt to the environment, or the space itself be adapted for the purpose.[1] I believe that the qualities of performance environments, whether considered limitations or benefits have always been taken into consideration by composers and performers throughout time. Imagine, for example, hearing a vocal composition by Hildegard Von Bingen (1098–1179) written for highly reverberant cathedrals performed in a bar over a typically awful PA system; or the chamber music of Bach, written for the relatively non-reverberant music salons of the aristocracy (allowing the intricacies

1 - As is the case with modern cities building concert halls, and other ritual specific architecture. See Small, 1998 for a brilliant dissection on the ritual of the classical music concert and its environment.

of the Baroque style to be easily distinguished) being performed in an empty gymnasium.

Special or sacred spaces where rituals are/were performed generally have special acoustics to add to the sonic environment. Throughout time many places for ritual, teaching and music have been chosen by humans for their particular sonic properties. Acoustician Trevor Cox (2012) talks of oral learning cultures' desire and need for spaces where communication is aided by its reverberant properties (Cox, 2012) and various studies in the field of archaeoacoustics have found that the spaces where cave art was made by prehistoric peoples were in acoustically interesting environments.(Eg: Watson, 1999; Moore, 2007; Rifkin, 2009)

Examples range from: an indigenous Australian cave painting site, where if you sit and speak a certain distance away from the image, it sounds as if the painting is speaking to the listener (Williams, 2012); a stone circle in northeast Scotland in which a sound emanating from a specific point projects clearly to certain positions, yet is obscures in others (Watson, 1999); and a burial mound, also in northwest Scotland, in which standing waves were formed through vocalisation, along with echoes and filtering also occurring at various points around and inside the mound. (ibid.)

These acoustic process' change the proto-instrument of the human voice, drum, etc... into a meta-instrument and was apparently a desirable feature when selecting or constructing a site for ritual purposes.

Meta-instrument and aural architecture.

In simple terms an instrument needs two things to produce a sound; an active energy source, and a collection of passive elements both of which combine to create a timbre unique to the instrument. (Blesser & Salter, 2007, p 135) At least this is the case in a space devoid of any acoustically reflective surface, such as an anechoic chamber.

If a sonic event, whether it be a flute being played or a tree falling, creates a noise, those sound-waves will instantaneously blend with its acoustic surroundings, creating a new meta-sound.

To use the example of a violin from *Spaces speak, are you listening* (Blesser & Salter, 2007, pp. 135-139), a player's muscles combined with a bow create the energy source which activates the strings. The vibrating strings then sends their energy through the bridge into the violin's resonating chamber. This acts as a "passive resonating chamber and surface radiator."(ibid.) This is the violin as a proto-instrument. Once the same violin starts playing inside a concert hall, the concert hall becomes a second resonating chamber, thus creating a meta-instrument.

S**inging rooms and re-amping.**

Every room has its own melody hiding there until it is made audible

Alvin Lucier

(Licht, 2007. p. 47)

A composer of many seminal sonic art compositions, Alvin Lucier's (1931-) works have been described as "engaging sound as a physical medium, the contexts of its experience, and how hearing and location activate one another". (LaBelle, 2007. p 125) One piece in particular, *I am sitting in a room* (1969) relates specifically to the use of aural architecture and exploiting its unique acoustic signature. It is a process driven work where the performer records themselves reading a passage of text in a room and plays it back through a loudspeaker while recording sound in the room. This process is repeated many times with the take from the previous iteration, and "develops into an accentuation of acoustic space whereby the sound source (voice) loses its original shape through the resonance of the spatial situation."(LaBelle, 2007. p 126) [2] Relating to the concept of the meta-instrument, the original recoding of the voice can already be considered as a meta-instrument, slowly moulding into the room as meta-instrument or, conversely, the room begins as the proto-instrument and is transformed into a meta-instrument through the reiterations. The process which Lucier has written into a score has its roots in the development of use of reverberation and echo in the production of early pre-magnetic tape recordings, where

2 The original version recorded in 1969 is available online at: http://ubumexico.centro.org.mx/sound/source/Lucier-Alvin_Sitting.mp3

microphone placement in relation to the sound-source was directly responsible for the amount of reverberation (which can be read as aural architecture, or perceived performance environment) which carried through to the final recording. Once multiple microphone systems were devised, even more of the performance environment could be let into the recording without sacrificing the clarity of the sound-source, a technique quickly adopted by the classical recording engineers in the 1920's. (Doyle, 2005) In the early musique-concrete work *Étude aux chemins de fer* (1948) Pierre Schaeffer(1910-1995) captured 'non-musical' real world sounds onto phonograph records using lathe-cutting recording equipment, frequently on location, and then proceeded to alter them at his studio. (Diliberto, 1986) Due to the nature of lathe-cutting technology, he would have to replay the sounds to capture them again on a different machine, therefore also capturing the effects which the acoustic architecture subjected on their source as well as their intended alterations.

This process of re-recording an otherwise dry recording by playing 'through' an environment is of course the principle behind the purpose built studio echo chambers built from the mid-twentieth century, and has found its place as a versatile technique in creating the illusion of space, or the perceived performance environment.

Producer as aural architect

The term perceived performance environment (PPE) refers to the virtual or physical aural architecture in which the recorded performance is taking place. In contemporary music studio recording practice, this is artificially created by the mixing engineer to make the individually recorded instrumental tracks appear to all be playing together on a certain 'sound stage' by extensive use of panning, reverb and equalisation to recreate what happens naturally in any environment.

This practice can be used to 'stage', or create a context for the music. A mixing engineer can choose to model an existing static acoustic space, or create a fluid virtual acoustic space, both of

which and every possibility between these extremes have the possibility of adding context to music. (Moylan, 2009; Zagorski-Thomas, 2010)

In considering aural space in music production, preconceptions based on genre has a large effect of the 'acceptable' possibilities. Two generally opposite examples, would come from 'classical' western art music and 'laptop music'.

In electronic 'laptop music' the only audible sound generating body is the loudspeaker or headphones, therefore the main physical restriction would be the number and quality of loudspeakers. There are no physically based preconceived notions of where the certain 'instruments' should be placed on the sound stage. The LFOs, software synths, etc... used by the performer/composer inhabit the virtual anechoic chamber of binary computation which takes no physical space, and is therefore devoid of any real-world acoustic processes. It is not until the propagation of sound waves through the loudspeakers that the laptop becomes a proto-instrument, which then reside and interact with the acoustic architecture of the performance or listening environment.

In the recording and production of classical music however, there seems to be a general desire for an ideal static acoustic space, promoting a 'natural' recording of the 'ideal' performance. (Draper, 2011)

The 'traditional' role of the producer in classical music record production

> *(While) all producers are there to get the best out of the artist so that you create the best recording possible... the fundamental difference between classical and pop (music production) is that classical producers are primarily there to get someone else's musical interpretation down on tape and are not... responsible for the orchestra's sound. Classical orchestras and musicians already have their own sound and all the producer should do is*

capture it.

Andrew Cornell

(Burgess, 2002 pp. 188-199)

When discussing of the role of the classical producer there are certain points which are consistently emphasised: (Draper, 2008; Frost, 2007; Leach , 1994; Revill, 1987; Tryggvason, 1987)

- Quality and precision of interpretation by the artists.
- Microphone choice/placement –

To create a sense of perspective, to recreate the experience of being in the best seat of the hall.

- Performance space –

IE: a quiet concert hall in which a live performance by the ensemble/soloist would normally take place in.

- Transparency of recording.

Minimal use of compression, equalisation, effects, etc...

The first point is applicable to the production of any genre, though as will be discussed in the case studies, every genre has their own different approaches to and interpretation of the terms 'quality' and 'precision'. Stephen Frost, a producer working in the classical genre, tells those who ask about his work that it mostly consists of “joining up the good bits and taking out the wrong notes.”(Frost, 2007) He is quick to explain however that this is not actually the case. In his paper 'Striking the wrong note' (Ibid.), Frost outlines the nature of a score being only a set of fairly vague instructions created by a composer to “make the music happen”(Ibid.). The transferring of a composer's musical ideas or concepts from their mind, to the paper/screen using the outdated and clumsy language of western music notation, only to have it go through the further processes' of performer interpretation, rehearsal and performance, is a notion which I have personally struggled

with in my own compositional practice. In addition to this, Frost states that “not all of the composer's wishes are contained within the printed score and the most important and meaningful of them simply cannot be, precisely because it is not possible to write them down.”(Ibid.)
As a producer of classical music where one would expect that the score dictates the idea of 'quality' and 'precision', there is also the undefinable aspect of human performance, which can sometimes trump 'precision'. (Frost alludes to participatory discrepancies (PDs) in classical music in his 2007 paper, and while space does not allow me to explore this topic further, there are many writings on PDs which are more general in scope. See Crooks, 2012; Keil, 1987; Keil, 1995)

The second point listed above (microphone placement/technique) may also seem to be a given for all types of music, though when the third and fourth points (performance space and transparency) are factored in, it necessitates very different methods.
Remembering, in general, that orchestras and smaller ensembles are considered a form of meta-instrument, the capturing of the aural architecture in which the performance is taking place is of great importance to achieve the balance and blending one ideally experiences when attending a concert of classical music. This is usually the basis for the positioning of the main microphone setup, commonly a spaced pair above the audience in front of the orchestra. Adrian Revill (1994) states however, that “it is not necessarily the experience of the record industry that placing one microphone in the 'best seat of the house' necessarily produces the best recordings.” This main recording setup is commonly lacking the real balance and clarity one experiences, or imagines (Tryggvason, 1980 pp. 271-272) when attending a performance, and needs reinforcement by the positioning of spot microphones on soloists or sections of an orchestra. At this point, we come to the closest one gets in traditional classical music production to the extreme isolation practices deemed necessary in popular music production.

Against the norms in classical music production

Glenn Gould: splicing and acoustic choreography

By taking advantage of the post-taping afterthought... one can very often transcend the limitations that performance imposes upon the imagination.

(Gould, 1966)

During the early to mid twentieth century, some performers, producers and conductors of contemporary western art music such as Glenn Gould saw recording technologies as a powerful means to create a musical experience not possible in a live concert situation. They saw the potential for studio recording to bring clarity and intelligibility to contemporary modernist works, usually too dense to absorb the nuances of tiny interrelated details in a live concert situation. (Draper, 2011)

Glenn Gould's career shift from concert pianist to studio performer/producer is well documented (Payzant, 1978; Ostwald, 1997; Bazzana, 2004), as are various stories and anecdotes regarding his views and methods on recording and producing classical music. One particular story relates Gould's recording of J.S Bach's A Minor Fugue from Book I of J.S Bach's *The Well-Tempered Clavier* (1965). After eight takes, from start to finish, two were selected which both had very differing character. After some deliberation, it was decided to splice part of one into the middle of the other. This created an unreal performance which would not be possible to achieve in a live concert situation. (Payzant, 1978. pp 38-39) In direct contradiction to other classical producers working at the time, when asked by an interviewer if he had objections to the use of splicing several performances into one, Gould responded "I see nothing wrong in making a performance out of two hundred splices, as long as the desired result is there... If the ideal performance can be achieved by the greatest amount of illusion and fakery, more power to those who do it."(Payzant, 1978. p 125). Of course, these views on recording were nothing new in popular music recording

practice at the time, but “to classical music, it was a slap in the face.”(Paul Dolden, quoted in Keillor, 2007)

In addition to splicing together the perfect performance, Gould experimented with a technique influenced by film making he described as 'acoustic choreography', where he positioned microphones at various points inside, around and far from the piano. He would later mix these together, sometimes favouring one angle for reasons now described as 'staging'. (Bazzana, 2004. pp 265-266)

While Gould is respected as both a performer and studio producer, his efforts have not affected the classical recording industry in any major way, however some producers, such as Paul Draper have expanded on his methods and philosophy in the western art music record production.

Paul Draper and DSP orchestration:

In the collaborative album *Remixing Modernism* (2010), producer Paul Draper and pianist Stephen Emmerson have expanded on Glenn Gould's concepts and applied them to their own interpretations of modernist solo piano works by Berg, Schoenberg and Bartok. The final product was released as a double cd, with one disc titled *Horizontal album*, and the other *Vertical album*. Both discs contain the same performances of the pieces with the *Horizontal album* being reflective of traditional western art music recording practices where clarity of performance as one would hear it in the audience is paramount. The intention behind the *Vertical album* however was to “...reflect, underline and enhance our interpretation of the work – of both its form and language” though the use of Gould's 'acoustic choreography' and what Draper calls 'Digital Signal Processing (DSP) Orchestration'. (Draper & Emmerson, 2011)

'DSP Orchestration' describes the process where Draper applied automated effects such as phasors, distortion and delay in accordance with the score analysis by himself and pianist Stephen Emmerson. Similar to the 'Gouldian' 'acoustic choreography', Draper's 'DSP Orchestration' is

nothing new when compared to the majority of records produced now, with Draper himself admitting that he has drawn upon modern popular music production techniques. (Draper, 2009) Draper and Emmerson state that the use of DSP Orchestration "...is potentially provocative and challenges some deeply embedded assumptions about Classical music"(Draper & Emmerson, 2011), and that "the project challenges the predominant approach in the recording of classical music where such works promote the illusion of capturing a concert experience and that sound production decisions appear to be transparent."(Draper & Emmerson, 2008) This has lead to polarised peer-reviews regarding the Vertical album, ranging from "An assault on the Viennese tradition" to "some (younger) listeners (being) so enthralled with certain tracks that they went back to the CD again and again."(Draper & Emmerson, 2011)

Method

In order to explore in detail how the conceptual approach of the producer as aural architect can help enhance a musical work, I have undertaken a practice based research method, which is summarised by Linda Candy of the Creativity & Cognition Studios at the University of Technology, Sydney

as:

> *an original investigation undertaken in order to gain new knowledge partly by means of practice and the outcomes of that practice... Whilst the significance and context of the claims are described in words, a full understanding can only be obtained with direct reference to the outcomes.*
>
> (Linda Candy, 2006)

The outcome of this research has been the production of two albums of differing genres, produced with the same conceptual approach. In the following section I will detail my methods specifically relating to the stated research topic, with the assumption that the reader has a grasp on basic microphone techniques and the

general workflow of the recording and production process.

In the recording process of this work, I have used a combination of various digital recording interfaces: The SSL C200 HD/64 at the main studio at Albany St Studios; a rack mount Digidesign D-002 8 input interface; an Mbox 2 input interface. Mixing was done on a combination of ProTools 10 and Reaper DAW software.

The case studies

till...

Album/Portfolio of compositions by Kerian Varaine.

For this album I have adopted Paul Draper's concept of *Vertical* and *Horizontal* mixes for the pieces *Ageng*, *Crave.Release*:|| and *Theme and variations.* The horizontal versions are reflective of the traditional classical music production aesthetic and are generally a static representation of the performance environment. The vertical versions use the techniques discussed earlier, such as acoustic choreography, re-amping, and to a lesser extent DSP orchestration, to enhance the works beyond their life as concert pieces.

About the piece:

A composition utilising a mixed quintet as a meta-instrument with harmonic material based on the spectral analysis of the Javanese Gong Ageng. During the composition of this piece, I was imagining the space in which it was to be recorded, an unused gymnasium owned by the University of Otago with a reverberation time of approximately 10 seconds, accompanied by flutter echoes and the incredible sensation of almost feeling the sound travel through such a large enclosed space.

Ageng: horizontal mix

Recorded at Marama Hall via fibre optic link to SSL C200 HD/64 at Albany St Studios *Ageng* was first performed on the 20th of August at Marama Hall, Otago University, and placed first at the Otago Lilburn trust composition competition, which secured its second performance in the same concert hall at a later date. Marama hall, in contrast to the aforementioned gymnasium, is a fairly typical, though very dry concert hall, totally unlike what I had been envisioning. To remedy this during the first performance, and to aid the audience in hearing what I imagined, I

placed a stereo pair of microphones in the centre of the ensemble and ran the signal through a low-latency convolution reverb modeling the impulse response from a similar gymnasium[3] to the monitor speakers on either side of the stage. The results were satisfying, but the performance was imprecise, so unusable for this album.

The second performance was well executed by the performers, however the stereo pair I had set up failed to work, and the piece was played perfectly without the live reverberation. Luckily I was the stage manager in recording the concert and had also placed an omnidirectional mic in the center of the ensemble. This signal blended with the spaced pair of omnidirectional room microphones, and the closer overhead cardioid XY microphones created the entirety of the horizontal mix.

It is a pleasing and balanced recording, especially considering it is a live concert recording.

Theme and variations

For piano

About the piece:

A piece which contrasts a Twentieth century modernist composition with Javanese gamelan style heterophony based on an initially distant theme which develops in width and weight through the liberal use of cluster chords. It is a dynamically varied piece which was written for the concert hall.

Description of microphone techniques:

- Two omnidirectional condenser microphones on a piano bar.
- One omnidirectional condenser microphone under the piano, placed by ear.
- One cardioid condenser stage microphone placed level with the top of piano, two meters out from the body's curve facing towards the open lid.

3 sourced from www.openairlib.net/auralizationdb/content/sports-centre-university-york

Tracking:

Recorded using D-002 8 input D/A preamp onto Reaper, at Marama Hall.

The piece was played through section by section, at points selected by myself and the performer. Notes were taken as to which take was best as we went along. There was some extraneous noises from the surrounding area as the recording had to take place during teaching hours, but the close microphone placement eliminated any bleed in all but the quietest sections.

Mixing the horizontal version:

The selected takes were consolidated into tracks, and a balance reached between the various microphones. Because of the shortage of ambient sound due to the closely positioned microphones, I placed the piano bar fairly high in the mix, to try capture the engineered reverberation that makes up the piano's resonating sound-box. I found that the cardioid stage microphone had enough room sound in it to constitute a more contemporary classical recording aesthetic. I believe this horizontal mix suffers from the lack of room sound, but still functions as a valid production.

Re-amping Ageng and Theme and variations for the vertical mix.

The Dunedin School of Art let me use their exhibition hall to re-amp my horizontal mixes of both pieces. After setting up an M-box and laptop, I played the mono mix of both tracks separately through a single self powered monitor at a loud volume and recorded the room with a very widely spaced pair of omnidirectional microphones, and then repeated the process again. I repeated this process with a mid-side microphone configuration placed in the middle of the room. Like Lucier's *I am sitting in a room* (1969) I wished to bring out the rooms resonant frequencies and utilise the recordings as source material to apply Gould's acoustic choreography. The room was perfect for

both pieces and resonated especially well with the double bass in *Ageng*.

Ageng- Vertical mix:

The process of re-amping gave me four extra tracks of aural architectural recordings to emphasise the meta-instrumental nature of the piece. Through volume automation of these tracks, I also highlighted the form by leaving some note attacks dry, and suddenly raising the volume on one of the re-amped tracks. I really enjoy the saturation and think it works well in this piece.

Theme and variations- vertical mix:

In the mixing of this track, I used the extra tracks to expand the performance environment alongside the themes development, thinking of the re-amped tracks as a kind of architectural accompaniment.

The initial theme starts distant, but as the cluster chords build and grow wider, the re-amped tracks are brought up in the mix, adding width. When the large cluster in played at 2:45, the re-amped tracks are switched from background to foreground, and envelope the listener, only to recede into the heavily compressed sympathetic harmonic passage, which gives the piano an almost hammered dulcimer quality. The rest of the piece contains very little automation, reflecting on the calmness of the music.

I found the concept of re-amping so fascinating in the way that a single speaker is recreating an instrument, or a collection of instruments. With *Ageng* an ensemble of five instruments whose secondary resonating chamber was a concert hall up the road, has turned into one-meta instrument whose secondary resonating chamber is now an exhibition hall.

With *Theme and variations*, due to the closeness of the horizontal mix, it felt as if the exhibition hall was the primary resonating chamber, essentially putting the listener inside the instrument.

Crave. Release. :||

For violin and piano.

About the piece:

A pseudo-programatic work regarding the emotional states associated with addiction, and the cyclical nature of satiation by and withdrawal from the substance one is addicted to. This piece follows an individual, or a culture, craving their nicotine, or gasoline, and the accompanying effects on their ability to cope.

Description of microphone techniques:

Recorded at Albany St Studios, on the SSL C200 HD/64

The piano was recorded in the same manner described in *Theme and Variations.*

The violin had a large ribbon microphone at the performers head height pointing directly at the body of the violin, to capture a full, rounded sound.

A second small diaphragm condenser microphone was positioned pointing at the bridge, focusing on the bow noise and more brilliant properties emanating from the bridge.

I also positioned a mid-side pair of microphones in opposite corner of the room from the performers as a source of room.

Tracking:

The first section of the piece was recorded in small sections due to the difficulty of performance. A direction in the score asks for the page turner to lift the lid of the piano at the transition between the first and middle section, directly after a forearm cluster chord. As page turners are not generally present at recording sessions, I had to perform this task as quietly as possible, by leaving the console whilst recording, and going through the passage until it was captured. The middle section had to be played in one take, due to the piano pedal being depressed throughout and the final section was then recorded in multiple sections.

Mixing the horizontal version:

Once the takes were compiled and consolidated, the room microphone became the basis for the entire mix, with some reinforcement from the violin microphones and even less of the outer piano microphone. During the middle section, a little more volume was applied to the microphone pointing at the bridge to bring out the harmonics, and the piano bar was raised in the mix, also to capture the rich harmonics occurring in the sound-box. The third section then returned to the original gain structure of the first section.

Mixing the vertical version:

In the vertical mix of this piece, I heavily utilised the technique of acoustic choreography almost in counterpoint to the score. For the entire first section, the room microphone was the major contributor to the overall mix, supplying an almost distant feel to an otherwise very aggressive and fast movement. Danny Buchanan was present during the rough mixing session for the vertical version, and he mentioned that he had a harmonic bass distortion pedal lying around. I found a suitable violin passage (1:02-1:06) which could benefit from the contradictory clarity that harmonic distortion can have, and recorded a new take. While it is barely noticeable, it does make the violin 'pop out' in a passage otherwise hidden by the piano.

With the help of Danny Buchanan, I was able to patch my homemade spring reverb box into the console, and record the middle section using only the violin bridge track from the mix. This was to be the main source of violin for the middle section, adding a particular colour which extends the feeling of floating release. During this section, both the piano bar and the omnidirectional microphone underneath the piano are raised in the mix, to compliment the extra reverberation of the spring reverb, and add its own self contained reverberation. I automated the volume on the piano bar track to drop each time a note is attacked so I could really push the gain up and boost the lower frequency reverberation without the attack overshadowing the rest of the texture. At the

end of the section, the piano strings are strummed with the piano bar volume raised at its highest for the entire piece.

In the final section, the mix between the violin microphones changes according to the score, with sul ponticello sections accentuated by the bridge microphone, and the drone like bowing harmonies being brought out by the microphone pointing at the body.

Dream. Breathe. Run.

For two flutes

About the piece:

This piece was composed for a live to air radio performance, broadcast from Albany St Studios in December, 2012, and was recorded for this project one morning in March, 2013 at Albany St Studios. A major point of the piece was to create a meta-instrument from the two flutes, which was achieved by careful scoring during the composition phase, and in post production through the use of the homemade spring reverb unit discussed previously as the main performance environment.

Description of microphone techniques:

Stephen Steadman was the engineer and helped me set up 3 pairs of microphones:

1 - A Blumlein pair set up in front of the two performers at a distance of three meters, at flute level.

2 - Each flutist had a cardioid condenser microphone positioned behind them, just above flute level pointing at the key-work.

3 - A microphone pointing up the flute at a 45 degree angle from the mouth piece in front of the flautist, around 30 centimeters away from the end of the flute.

Tracking:

recorded using SSL C200 HD/64

The piece was run through from start to finish until I was certain that each section of the music was well represented. This involved a lot of subjective opinions on my part as the composer, as there are semi-improvised sections interspersed within an otherwise strictly metered composition.

Mixing:

The mixing process initially involved choosing the best takes for each section, and consolidating them to create one take. I did not include the material from microphone pair 3 in the mix, as it did not deliver as radically different a sound as I thought it might.

I used microphone pair 2 as the main source panned %50 left - %50 right, backed up by the Blumlien pair panned hard left and right. This created the initial staging necessary for the next phase.

I fed the left and right channels through my spring reverb unit separately, experimenting with placing the transducer and pickup at different points on the springs to locate where the most resonant frequencies were being activated, and recorded the output.

till...

for human & architectural noise floor

About the piece:

This work of sonic-art is an interpretation of the score found on the cover of this album, and is a distillation of all the concepts I have explored throughout this paper.

For this interpretation I have defined *architecture* as any human constructed environment, and *noise floor* as the level of sound present in an environment when there is no input signal coming from the performer.

In this case, the input signal is the performers initial burst of sound, indicated by the black rectangle, followed by their breath, until they have finish the performance.
Each environment has its own unique characteristics, and its noise floor is infinitely variable, sometimes even obscuring the input signal. In this piece, I have layered various locations to create a fluid virtual aural architecture.

Method/Microphone technique/Tracking:

I performed this work in a variety of locations over the period of eight months in 2013, and recorded the environment using the following recording methods:

-Two separate sessions under Cumberland Street bridge using a Tascam DR-40 handheld field recorder (XY condenser microphones).

-St Paul's Cathedral, Dunedin, using a spaced pair of cardioid condenser microphones, on stands, 2.5 meters high around the choir seats, running through a D-002 A/D converter into Reaper DAW software on a MacBookPro.

-Golden Center Mall, Dunedin, using a Zoom H4 handheld field recorder (XY condenser microphones).

Mixing:

After uploading all the recorded material into the Reaper DAW software, and sorting through what I intended to use, I arranged a few different draft works according to the score. Once satisfied with one arrangement, I looped a close mic'ed recording of my breathing over the majority of the arrangement. In order to break the impression of the breathing being a loop, I automated a simple panning and gain plugin with a randomised LFO and automated the pitch setting on Michael Norris' *spectral pitch shifter* plugin with a seperate random LFO. (*Spectral pitch shifter* plugin found free of charge at: http://www.michaelnorris.info/software/soundmagic-spectral.html). The effect this creates can be unsettling, however I enjoyed the variations in the

overall texture that it created, with the breathing sometimes at the front of the mix, and at other times being obscured by the environmental sounds emanating from the aural architectural surroundings.

After automating the gain on the various tracks to create pacing and form, I applied a multi-band compressor to the recording from the mall, to help balance it into the piece.

Mastering of till...(the album)

With all the tracks finished, mastering was only a matter of checking relative levels and dynamic range. Fixing relative levels was done in Reaper using a basic gain plugin in combination with a limiter, while dynamic levels were referenced against the dynamic markings in the scores themselves.

Packaging for till...

The design was created on Inkscape, an open source scaleable vector illustration program, using the score for the title track as the cover art. I have kept the design as minimal as I could while still including the relevant information. As the purpose of this album is to act as a portfolio of my work in both the composition and recording/production world, I did not deem it necessary to include detailed descriptions of my works in a booklet format. As a recording, this CD speaks for itself. As a compositional portfolio this CD would be accompanied by a written portfolio containing scores, program notes and the conceptual writings associated with the pieces.

As of this writing, after destroying countless blank CDs, I have not figured a cheap and appropriate way to label the disc.

FERAL HUNKS:

Three piece rock/punk band as a meta-instrument.

About the band:

The Feral Hunks are a three piece band, fitting somewhere between the genres of rock, punk and metal, with major influences ranging from free-noise to minimalism. The majority of singing alternates between the drummer and the bassist, though all the performers sing at some point in almost every song. The lyrical content of their songs ranges from the debilitatingly depressive, found on the track *Nuclear Family Photo Album,* the outright cynical and satirical heard on *Power of Conformity*, and the poetic political ranting in the track *Tern lost*.

In my opinion the lyrics are what makes this band outstanding, as well as their ability to perform their challenging songs live, and these are the major points I have tried highlighting as the producer of their album.

My role as producer:

In this project, I assumed the role of producer as documenter. I had no inclination to alter any aspect of the music, and wished only to record the band as they appeared in an ideal live performance situation. In this regard I took on the traditional classical music producer aesthetic mentioned early in this paper, the band has their own sound, and my job is to capture it.

As part of pre-production, it was my job to make sure all the members were comfortable under the pressure of a live microphone, so I arrived unannounced to record their rehearsal, and also recorded a live concert a few weeks before the recording session was planned. This approach worked well, as one member, who had previously been uncomfortable with recording, was pleasantly surprised by the live recordings I had made.

Method*:*

The band was recorded live in the main studio at Albany Street Studios on the 14th and 15th of August,2013. The band was to record the songs live as an ensemble, with the vocals being tracked at the same time. Monitors were set up by each performer, mimicking the live performance setup one would normally see in a venue.

I enlisted the help of Michael Holland on the first morning to act as engineer while we set up. Michael has had a lot of experience using the Albany Street studio in a similar way to what I wanted, and an especially good knowledge on various drum microphone techniques. After describing what I wanted, Michael positioned the microphones and set up the recording console. Setting up took the better part of the morning, with the rest of the time devoted to tracking.

Each track was to be played in one take, with no overdubbing. I was warned that this method can be prone to fail dramatically, and indeed I had found this out on a previous recording session with a different band, however I was certain that the Feral Hunks were up to the challenges associated with this method.

Description of microphone techniques:

The predominant recording position was the mid-side microphone pair placed in the centre of the triangle formed by the band, which achieved the room sound so important in the creation of the meta-intrument I was striving for. This was placed with the figure 8 pattern microphone between the bass and guitar, and the cardioid pattern condenser microphone facing the drum kit.

To support the main pair, the guitar and bass were close mic'd with condenser microphones, with the bass also running through a DI box. Four microphones were used to record the drum kit, two well placed condenser overheads and a front of kit ribbon microphone, with an additional dynamic microphone placed close to the snare and gated during the recording session.

Each performer had a dynamic cardioid microphone set up for vocals, chosen for their ability to reject the abundant off axis sound sources which were present throughout tracking.

Tracking*:*

recorded using SSL C200 HD/64

With only two days to record the ten songs to be on the album, and no chance of further recording time due to the drummer going overseas directly afterwards, there was a certain amount of pressure to get things right. Eighty takes in total were made during tracking, with only small compromises being made regarding the precision of the performances. In some cases, certain members may not of been entirely happy with their own performance, though they agreed the specific take was excellent when taken as a whole. The entire process went as smoothly as I had hoped, and was an enjoyable experience for all involved.

Once the tracking was completed, and a rough mix was built around the main room microphone, I realised that the vocals were too dry, and were not blending well with the rest of the instruments. To counteract this I played the vocals back into the main studio, recording the room with a mid-side pair of microphones set a distance away in front of the speakers and an omnidirectional microphone set above and behind the speakers to catch the more distant room reflections. This effectively gave me a stereo track in addition to an extra wet track of room derived reverberation to help the vocals more effectively sit in the mix. This process of re-amping the vocals inside the aural architecture in which the band was playing, in addition to the main mix being built around the mid-side pair has created a stronger sense of the ensemble acting as a meta-instrument.

Mixing*:*

DAW: Protools 10 with D-002 interface.

In total I have mixed this album three times from scratch. The first two times ended up being very dry, having too much emphasis on the close microphones on the instruments. This also created some phasing issues, which I was not able to solve confidently, so I stated again almost from scratch. I did happily retain the painstaking vocal automation I had programed due to undesirable

plosives and sibilance coming though.
Throughout the mixes I made it a point to not use artificial reverb, or other effects, and only stick to compression and mild equalisation to correct undesirable room artefacts, and to give the instruments space. These artefacts were present in part because I had not treated the vocals before the re-amping session, and because of the method of basing the mix off the room microphones led to a slightly muddy product.
After mild equalising these artefacts became a desirable part of the overall sound of the production.

There are specific decisions I made relating to my research throughout this production, and I wish to draw on a few example tracks now to illustrate my approach.

Hairy shame: track 5
This song deals with the subject of beauty ideals in mainstream media from a males perspective. I believe this is not a topic frequently explored by many male songwriters, perhaps due to what our culture deems as “manly”. The private nature of self-criticism, pressure to fit in with the 'norm', and the anxiety caused to ordinary people by members of the advertising teams in charge of selling worthless commodities on the basis of sex, and I wished to highlight this in the mix.
To accentuate both the satirical and personal nature of the lyrics, I kept the re-amped vocals up further in the mix than I did for any other track. This was done for staging purposes, in that it places the singer inside a toilet cubical, or bathroom, letting out their anguish in a usually private space. When the group vocals come in however there is an aspect camaraderie with the protagonist which comes through, akin to the support one would hope for when sharing such personal dilemmas.

To spend the days of an easy life asleep: track 6

For the introduction to this track I used the re-amped vocals to simulate a pseudo-stadium ambience, in that the level of reverberation is higher than any other point in the song, until the group vocals cry out “stadium!” at 1:47, where the re-amped vocals are again pushed up in the mix. This serves the purpose of both clarifying the subject matter while enforcing the satirical tone of the track, which I have seen misinterpreted by an audience member as a pro-stadium song at a live concert I attended during pre-production.

Mastering*:*

The mastering process was relatively simple after achieving the desired mix, only needing slight equalisation cuts in the 200-450 Hz range for clarity, and a High pass filter around 50 Hz to aide in reducing the sub-bass frequencies which was only obvious on certain playback systems. Comparative listening tests of recordings from similar bands proved to be the best way to judge at what level the average dynamics should be.

Packaging*:*

Up until the 17th of October, the band members were still unsure of their final medium, and I had left it with them to organise the packaging for their album.

I have produced this album on the assumption that it would be a CD and web based release, though one member has a connection with a vinyl manufacturer overseas and is currently pursuing that as an option.

The current packaging will be used and sold at their shows to raise money for the vinyl release, and I believe it is an appropriate presentation for the audience they attract. The minimalist, DIY aesthetic combined with the jarringly anti-capitalist cover-art will definitely appeal to their target audience. The band has yet to find a cheap way of labeling their CDs, and so have left it blank for now.

Conclusion

Throughout my practice and research I have found the conceptual approach I have taken to recording and production refreshing and fairly removed from the tedium I associate with the overdubbing practices currently favoured by the production industry. The ability to 'compose an accompaniment' through the medium of aural architecture in *till...* was stimulating, and conceptually satisfying. Essentially being able to perform my own arrangement of Lucier's *I am sitting in a room*, and using the product to add space, weight and depth to my own compositions has be a rewarding experience. While these practices are nothing new in the world of popular music production, to tastefully and assuredly apply these techniques to classical music production is a worthy endeavour. In contrast to that, being able to treat a three piece rock/punk band as a 'classical' ensemble and everybody involved be satisfied with the results in comparison to similar bands, is a promising thought. While the methods I used would be risky with most bands, it is worth considering as something for an ensemble of any genre to rehearse for.

One of the goals I set myself at the beginning of this research was to seek my personal style as a producer. I believe I have found it though this research.

Kerian Varaine

October 2013

References

Adrian, A. 1987. Classical music. In: Borwick, J. eds. 1987. *Sound recording practice*. 4th ed. Oxford: Oxford, pp. 346-359.

Bazzana, K. 2004. *Wondrous strange*. New York: Oxford University Press.

Blesser, B. and Salter, L. 2007. *Spaces speak, are you listening?*. Cambridge, Mass.: MIT Press.

Cox, T. 2013. *TEDxSalford - Trevor Cox - Become a Sound Explorer*. [online] Available at: http://www.youtube.com/watch?v=_qh7gmF_epY [Accessed: 20 August 2013].

Crooks, J.. Recreating an Unreal Reality: Performance Practice, Recording, and the Jazz Rhythm Section. *Journal on the Art of Record Production*.

Diliberto, O. 1986. *Pierre Schaeffer & Pierre Henry: Pioneers in Sampling*. [online] Available at: http://web.archive.org/web/20100106235032/http://emusician.com/em_spotlight/Pioneers_Sampling [Accessed: 16 Oct 2013].

Doyle, P. 2005. *Echo and reverb*. Middletown, Conn.: Wesleyan University Press.

Draper, P. and Emmerson, S. 2008. Music, Recording, and the Art of Interpretation. *sound*, p. 29. Available at: http://www98.griffith.edu.au/dspace/handle/10072/29122 [Accessed: 12 August 2013].

Draper, P. and Emmerson, S. 2011. Remixing Modernism: Re-imagining the music of Berg, Schoenberg and Bart\'ok in our time. *Journal of the Art of Record Production*, (5), Available at: arpjournal.com/1121/remixing-modernism-er-imagining-the-music-of-berg-schoenberg-and-bartok-in-our-time/ [Accessed: 7 september 2013].

Frost, S. 2007. Striking the wrong note. *Journal on the Art of Record Production*, (1), Available at: http://arpjournal.com/374/striking-the-wrong-note/ [Accessed: 29 July 2013].

Gould, G. 1966. The Prospects of Recording. In: Cox, C. and Warner, D. eds. 2004. *Audio culture:Readings in modern music*. New York: Continuum International publishing group.

Keil, C. 1987. Participatory discrepancies and the power of music. *Cultural Anthropology*, 2 (3), pp. 275--283.

Keil, C. 1995. The theory of participatory discrepancies: A progress report. *Ethnomusicology*, 39 (1), pp. 1--19.

Labelle, B. 2006. *Background noise*. New York: Continuum International.

Licht, A., O'rourke, J., Fontana, B., Roden, S., Dubuffet, J., Burr, A., Curtis, C. and Gál, B. 2007. *Sound art*. New York, N.Y.: Rizzoli International Publications.

Moore, J. 2007. Set the wild echoes flying. *Antiquity*, 81 (313), pp. 793--796.

Moylan, W. 2009. Considering Space in Music. *Journal on the Art of Record Production*, (4), Available at: arpjournal.com/1379/cosidering-space-in-music/ [Accessed: 29 July 2013].

Ostwald, P. 1997. *Glenn Gould*. New York: Norton.

Payzant, G. 1978. *Glenn Gould*. Toronto: Van Nostrand Reinhold.

Rifkin, R. 2009. Engraved art and acoustic resonance: exploring ritual and sound in north-western South Africa. *Antiquity*, 83 (321), pp. 585--601.

Small, C. 1998. *Musicking*. Hanover: University Press of New England.

Small, C. 1997. Musicking: a ritual in social space. *On the sociology of music education. Norman: University of Oklahoma*, pp. 1--12.

Trygg, T. 2013. Classical music. In: Bowick, J. eds. 1987. *Sound recording practice*. 2nd ed. Oxford: Oxfor University Press, pp. 271-295.

Watson, A. and Keating, D. 1999. Architecture and sound: an acoustic analysis of megalithic monuments in prehistoric Britain. *Architecture*, 73 (280), pp. 325--336.

Williams, G. 2012. Rock art and pre-historic ritual behaviour: A landscape and acoustic approach. *Rock art research*, 29 (1), pp. 35--46.

Zagorski-Thomas, S. 2010. The stadium in your bedroom: functional staging, authenticity and the audience-led aesthetic in record production. *Popular Music*, 29 (02), pp. 251--266. Available at: jounals.cambridge.org [Accessed: 28 July 2013].